MT CURRICULUM GUIDE M 9
Objective: Understanding friction as a force that opposes Motion

INGREDIENTS

Each group should receive:

- Three to four matchbox cars of the same size
- Large piece of foam board
- Beach towel
- Yardstick
- Masking tape
- 6 pennies

INSTRUCTIONS

Divide the class into groups of four to five students. The groups will be observing how the matchbox cars move on two surfaces: a smooth surface and rough surface.

Create a "ramp" by placing a stack of books (about 1 foot high) under one end of the foam board.

Students "race" the matchbox cars down their ramp to find two that move at generally the same speed. To do this, line up the cars at the top of the ramp and hold them back with the yardstick. Have one student hold the yardstick and lift it suddenly to let the cars race down the ramp.

Tape 3 pennies on top of each car and repeat. What happens?

Have each group cover the left-hand side of its foam board with the beach towel, using masking tape to secure the towel to the back of the board (to keep it from slipping). Their foam boards should now have two "tracks"—a plain track and a towel track.

Remove the pennies and have the students race the cars
Repeat with the pennies taped on again.

Explain how surface type influences the amount of friction there is. Discuss the relationship between the size and weight of an object and the amount of friction that is present.

MT CURRICULUM GUIDE M 9
Objective: Experience Newton's First Law of Motion

INGREDIENTS

Washers
(8 for each student, or group)

INSTRUCTIONS

Stack 4 washers one on top of the other so that you form a tower of washers.

Place the stack of washers on top of your textbook or on the floor so that you have a smooth, slick surface.

Aim one washer at the bottom of the stack of four washers and give it a good hard flick with your finger or hand.
What happens?

Flick a stack of two washers into a stack of four washers. What happens?

Flick a stack of four washers into a stack of four washers. What happens?

Inertia wants to keep a body at rest.